Texas Commission on Environmental Quality (TCEQ)
Source Testing Information Form

Referenced to: Mr. Ryan Slocum	Phone No.: (432) 570-1359	5 pages

The requested information will be reviewed by Regional Emissions Evaluator Team to determine if a Pretest meeting and/or test observation will be necessary. General guidance for major issues is also included. If you have any questions please contact the Region 7 office at Regional Phone # (432) 570-1359.

To	Region 7 Air Section Manager / (Regional FAX 432-561-5512)	
From	EnRUD Resources	
Date	3/10/2025	___5__ Pages

Section I - SOURCE INFORMATION

Company	Continental Resources, Inc.		
Contact/Title/ Phone/ FAX/E-mail	Kinsley Hall / Associate Environmental Specialist / (405) 774-5846 / [redacted]		
Facility Name	Gardendale Blue 0904 1001H		
Mailing Address	20 N. Broadway, Oklahoma City, OK 73102		
Physical Address	Station Name: Gardendale Blue 0904 1001H	Latitude: 32.020289	Longitude: -102.318774
City (Source)	Gardendale	State (Source)	Texas
Permit No.		Account No.	
Regulated Entity No.	RN111755021	Customer Ref No.	CN603075706

Section II - UNIT INFORMATION

Unit/EPN/ Testing Company	Unit #9461 – CAT 3306TAA, 211 Hp/ ENG-2 / EnRUD Resources, Inc.		
Applicable Rules/Regs.	40 CFR, Part 60 – Subpart JJJJ		
Testing Required By (Consent Decree, Initial Compliance Test, Permit Condition, etc.)	Initial		
Construction Date	4/6/2014	Operational Date	
Test Parameter(s)	NOx, CO, O2, and VOC		
Test Deadline Date			
Safety training/equipment required for unit entry	( ) Verbal briefing (x) Safety shoes ( ) Safety video (x) Safety glasses/side shields (x) Hard hat (x) Flame retardant clothing ( ) Other: _____ _____		

Section III - TEST PROTOCOL GUIDANCE

The following is a general checklist for items that should be included in the Test Protocol. This document must clearly describe the operational and testing procedures. Deviations from the Test Protocol may result in rejection of the results. Chapter 4 of the TCEQ Sampling Procedures Manual discusses the Test Protocol in more detail. Test Protocols must be received fourteen (14) days prior to a Pretest meeting. If you have any questions please contact the Region 7 Office or the Engineering Services Team in Austin.

Confidential material should be clearly marked and submitted under a separate cover. All confidential material will be handled according to guidance in the TCEQ Records Management Manual.

Item #		(T)
1	Source Test company and Contact information (phone/FAX/E-mail).	✓
2	Proposed test method changes. **Please note that changes must be submitted in writing to the Regional office no later than 30 days prior to testing. Major changes will require written TCEQ or EPA approval prior to testing.**	✓
3	Source/stack schematic illustrating sampling and CEMS locations, ports, and accessibility.	✓
4	Process description/flow diagram detailing measurement sites, process controls monitoring devices, etc.	✓
5	Design, normal, maximum, and proposed unit operating rates, including conditions represented in the Permit Application.	✓
6	Design, normal, and maximum control device(s) operating rates, including conditions represented in the Permit Application.	N/A
7	Unit/control device(s) operating parameters to be monitored, i.e., fuel flow meter, scale, etc.	✓
8	Proposed EPA, TCEQ, or alternative test methods.	✓

Section IV - GENERAL GUIDANCE

The following items are very brief discussions of topics which often present problems during the compliance testing and reporting process. If you have any questions please contact the Regional 7 office or the Engineering Services Team in Austin.

Item #		(T)
9	Understanding and complying with regulatory, sampling, and reporting requirements is the responsibility of the Source.	✓
10	It is the responsibility of the Source to ensure the final report meets the requirements of Chapter 14 of the TCEQ Sampling Procedures Manual which is available from any Regional office.	✓
11	TCEQ requires separate filterable and condensable particulate matter emissions calculations in the test report.	N/A
12	Field data sheets should be completely filled out by the end of each sample run.	✓
13	Although there is no requirement to calculate individual point isokinetic, excessive deviations may invalidate a sample run.	N/A
14	If a unit is fueled with pipeline quality natural gas, one fuel analysis during a test series will be required. Any other fuel will require a minimum of one fuel analysis during each sample run.	✓
15	Parameters which determine production or operating rate shall be monitored during each sample run. Operating rates should not vary more than ±10% during a sample run or over the course of three sample runs.	✓
16	Calibration data for process instrumentation is required.	✓
17	Process data must be clearly labeled in the units of measure.	✓
18	Electronically recorded data must meet the functional traceability of data manually recorded in indelible ink.	✓
19	One NOx converter efficiency check is required for each source or daily if multiple sources are tested in a 24-hour period.	✓
20	All collected samples not analyzed on site require a Chain of Custody.	✓

FINAL INSTRUCTIONS

Submit this form, the Test Protocol and any proposed changes to the Emissions Evaluator Team in the Region 7 office. If a Pretest meeting is deemed necessary or specifically requested by the Facility, scheduling will be coordinated with the Facility Contact.

TCEQ Contacts:

Ryan Slocum
Region 7 – Section Manager
9900 W. IH-20, Ste. 100
Midland, TX 79706
(Phone # 4362-570-1359)
(Fax # 432-561-5512)
ryan.slocum@tceq.texas.gov

SECTION V - SCHEDULING

Notification Date	3/10/2025	Protocol submittal Date	3/10/2025
Proposed Pretest Date	Week of May 19, 2025	Proposed Test Date	Week of May 19, 2025

EMISSIONS TEST PLAN
Reciprocating Internal Combustion Engine (RICE)
40 CFR 60 Subpart JJJJ Performance Testing

Continental Resources, Inc.
Compressor Engine 9461 / Serial #: R6S02586
Gardendale Blue 0904 1001H
RN111755021

Prepared For:

Continental Resources, Inc.
20 N. Broadway
Oklahoma City, OK 73126
(405) 234-9000
CN603075706

Prepared By:

Mr. Roy S. Cannon
Source Testing Division Manager

EnRUD RESOURCES, INC.
1006 Vista Rd.
Pasadena, TX 77504
(O) 713-943-1600

March 10, 2025

TABLE OF CONTENTS

1.0 INTRODUCTION

Continental Resources, Inc. (Continental) is required to test one (1) Caterpillar 3306TAA Engine (Unit #: 9461; Serial #: R6S02586) located in Gardendale, TX at their Gardendale Blue 0904 1001H facility in accordance with the Standard of Performance for Stationary Spark Ignition Internal Combustion Engine requirements set forth in 40 CFR 60, Subpart JJJJ (Quad J). The engine testing is described below:

In accordance with the 40 CFR Quad J requirements, the engine is required to show compliance with Volatile Organic Compound Concentration (VOC) limit along with emission limits of Oxides of Nitrogen (NO_X) and Carbon Monoxide (CO). EnRUD Resources, Inc. (EnRUD) will conduct the performance emissions tests on the 40 CFR 60 QUAD J Engine as listed above to show compliance with the emission limits. Testing will be performed at loads of 100% +/- 10%, or maximum achievable load possible due to line conditions.

1.1 Project Objectives

The objective of this test program is:

1) To demonstrate compliance with the 40 CFR 60 QUAD J emission limits on the 40 CFR 60 QUAD J Engine as listed above.

2.0 EMISSIONS TESTING PROGRAM

To demonstrate compliance with the 40 CFR 60 QUAD J emission limits, VOCs (THC and Methane), NO_X, CO, O_2 concentrations will be measured at the exhaust stack of the 40 CFR 60 QUAD J Engine.

2.1 40 CFR 60 QUAD J ENGINE TEST PROGRAM

- Conduct an emissions test consisting of three (3) sixty-minute test runs on the Caterpillar 3306TAA Engine to determine the hourly concentrations of VOC, NO_X and CO.

- Analysis of the outlet flue gas for NO_X, CO, and VOC will be performed using EPA Test Method 7E, 10, and 25A. It will be performed using a continuous emissions monitoring system containing one California Analytical 600 FTIR Analyzer, and one California Analytical 700 FTIR Heated Sampler. During testing, substitution of these analyzers may take place depending on which testing trailer is available for the test date.

- Sampling of the outlet flue gas for O_2 will be performed using EPA Test Method 3A. It will be performed using a continuous emissions monitoring system containing one California Analytical Model 600 Series O_2 Analyzer. During testing, substitution of this analyzer may take place depending on which testing trailer is available for the test date.

- Stack flow will be calculated using Method 19 with a calibrated fuel flow meter if available, if one is not available fuel flow will be calculated using manufacturer specifications.

- Prepare a compliance test report for the emissions test for Continental, and the Texas Commission on Environmental Quality (TCEQ) Regional office.

2.2 40 CFR 60 QUAD J ENGINE MONITORING

During the test program, the 40 CFR 60 QUAD J Engine process data will be logged by either EnRUD or Continental personnel. The data will be logged on field data sheets for the 40 CFR 60 QUAD J Engine. Data will be logged to determine the tested load. EnRUD/Continental will provide an accurate description of all equations used to determine load of the 40 CFR 60 QUAD J Engine. Ambient temperature, fuel usage, and engine parameters will be recorded during each test by EnRUD.

Continental will provide the process data after completion of testing.

3.0 EMISSIONS TEST METHODS

All emissions testing on the 40 CFR 60 QUAD J Engine will be conducted using promulgated U.S. Environmental Protection Agency (EPA) test methods and procedures contained in 40 CFR, Part 60, Appendix A, Test Methods. An overview of the EPA test methods proposed for the 40 CFR 60 QUAD J Engine is listed in the following section.

3.1 40 CFR 60 QUAD J ENGINE TEST METHODS

COMPONENT	US EPA TEST METHOD
Sample and Velocity Traverses for Stationary Sources	EPA Test Method 1
Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)	EPA Test Method 3A
Determination of Oxides of Nitrogen Concentration (Analyzer Method)	EPA Test Method 7E
Determination of Carbon Monoxide Concentration (Analyzer Method)	EPA Test Method 10
Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide and Nitrogen Oxide Emission Rates	EPA Test Method 19
Determination of Total Gaseous Organic Concentrations Using a Flame Ionization Analyzer	EPA Test Method 25A
Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive Fourier Transform Infrared (FTIR) Spectroscopy (Analyzer Method)	EPA Test Method 320
Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform Infrared (FTIR) Spectroscopy (Analyzer Method)	ASTM D6348-03

3.2 CEM SYSTEM DESCRIPTION

Continuous Emissions Monitoring of the 40 CFR 60 QUAD J Engine for NO_X, CO, THC, NMTHC and O_2 concentrations will be conducted by using EnRUD's mobile emissions testing laboratory which contains a continuous emissions monitoring (CEM) system. This CEM system is known as the Reference Method (RM) CEM. An overview of each component of the CEM system proposed for this test program is presented below:

A. Sample Probe:

A 3/8" internal diameter, piece of stainless-steel tubing will be used as the sampling probe for the outlet points on the 40 CFR 60 QUAD J Engine. The measurement location of the reference method sampling probe will be at the centroid of the stack if the NO_X values from the three (3) points within the stack are within 5% of the mean value. The stack will be measured and the probe marked at points 16.7%, 50.0%, and 83.3% of stack diameter for this determination.

B. Sample Line:

The stainless-steel sampling probe will be connected to a three-way stainless-steel valve connected to a 50-foot (or greater) section of 3/8" heated, insulated sample lines. The sample lines will consist of Technical Heaters Model MT212-50 (or similar) heated hose with a 3/8-inch outside diameter heated sample tube and a 1/4 inch outside diameter system bias check tube. Both the sample tube and the bias tube are constructed of Teflon will be used to transport the sample and calibration gases from the three-way valve to a sample pump. In order to maintain the temperature of each sample line section above 250 ^oF but normally around 300 ^oF, each sample line will be connected to a temperature controller enclosed in a weather proof enclosure with solid state relay.

C. Sample Pump:

One internal sample pump will be used to transport the exhaust gases to the electronic conditioning system, after first being introduced to the FTIR Analyzer system. After conditioning, the exhaust gases are sent to a sample manifold, individual flowmeter and to the O_2 Analyzer. An internal heated sample pump for the FTIR Analyzer system will be used to transport the exhaust gases directly to the FTIR Analyzer (for NO_X, CO, and VOC).

D. Gas Analyzer:

Outlet flue gas Oxygen concentrations will be measured using a California Analytical (CAI) 600 Series O_2 Analyzer, while the NO_X, CO, and VOC concentrations will be measured using a CAI 600 FTIR / CAI 700 FTIR Heated Sampler Analyzer system.

E. Data Recorder:

Voltage output from all analyzers will be logged by EnRUD's 600 FTIR OPUS software data logging system.

3.3 CEM SYSTEM CALIBRATION

The zero and span ranges of each analyzer of the CEM system will be calibrated directly as well as through the sampling system prior to and after each run. The instrument span range for NO_X and CO will be approximately 0 to 100 ppm, THC will be approximately 0 to100 ppm and O_2 will be 0 to 21%. The instrument ranges will be adjusted accordingly based on each engine's actual analyte concentrations.

For all analyzers, calibration of the zero range will be conducted with CEM grade nitrogen (zero nitrogen). Calibration of the span ranges will be conducted with EPA Protocol One gases in nitrogen. All calibration gases used will be EPA Protocol 1 and will correspond to the required ranges as specified in 40 CFR 60, Appendix A, Test Methods 3A, 7E, 10, and 25A.

4.0 EMISSIONS TEST PROGRAM OBJECTIVES

4.1 CATERPILLAR 3306TAA, 211 HORSE POWER ENGINE (UNIT #: 9461 / SERIAL #: R6S02586) TEST OBJECTIVES

The objective of this emissions test program is to verify the source's ability to meet the emission limits set forth in 40 CFR 60, Subpart JJJJ:

NOx: 0.5 g/hp-hr

CO: 2.0 g/hp-hr

VOC: 0.7 g/hp-hr

5.0 REPORTING

Process operational data will be recorded by EnRUD/Continental personnel and will be logged onto data sheets. NO_X, CO, THC, and O_2 data from the outlet points will be recorded by EnRUD's data logging system. Data for EPA Method 1 will be recorded onto field data sheets for each engine.

A detailed emissions test report meeting TCEQ guidelines will be submitted to Continental Resources, Inc. within 30-days of completion of the test program based on availability of laboratory data (if applicable). All report data reduction, emissions calculations, and report preparation activities will be conducted by EnRUD.

6.0 EMISSIONS TEST PROGRAM SCHEDULE

The test program is tentatively scheduled to take place during the week of May 19, 2025. Testing of the aforementioned unit should take approximately one (1) day.

Proposed Test Schedule

Dates	Personnel	Task Description
Week of May 19th	1	Travel to Continental, set up for testing and Conduct Three (3) One (1)- Hour Test Runs on One (1) Caterpillar 3306TAA Engine.

APPENDIX A

QUALITY ASSURANCE /QUALITY CONTROL

APPENDIX A GENERALLY APPLICABLE QC CHECKS

The following QC checks are generally applicable to source sampling techniques. If any corrective actions are taken in response to results for these QC checks or in response to supervisor review of QC procedures, the corrective action taken will be documented in the field QA/QC logbook.

1. Each sampling train will be visually inspected for proper assembly before every use.

2. Assembly and recovery of the sample trains will be performed in an environment free from uncontrolled dust.

3. All cleaned glassware, hardware, and prepared sorbent traps will be kept closed with ground glass caps, precleaned aluminum foil, Teflon or Parafilm until assembly of the sample train in the field.

4. All sampling data will be recorded on standard data forms which will serve as pre-test checklists.

5. The number and location of the sampling traverse points will be checked before taking measurements.

6. The inclined manometer used to measure the differential pressure (ΔP) across the S-type pitot tube will be leveled and zeroed (if applicable).

7. The temperature measurement system will be visually checked for damage and operability by measuring the ambient temperature prior to each traverse.

8. The sampling nozzle will be visually inspected before and after each run for damage (if applicable).

9. The S-type pitot tube will be visually inspected before and after each run for damage (if applicable).

10. Each leg of the S-type pitot tube will be leaked-checked before and after each run (if applicable).

11. During sampling, the roll and pitch, axis of the S-type pitot tube and the sampling nozzle will be properly maintained (if applicable).

12. Dry gas meter readings, ΔP and ΔH readings, temperature readings, and pump vacuum readings will be properly made during sampling at each traverse point (if applicable).

13. Handling of the filters will be performed in clean areas out of drafts. Teflon-coated tweezers will be used to transfer the filters at all times (if applicable).

14. The entire sampling train will be leak-checked before and after each run. If the sampling train is moved from one sampling port to another during a run, the train will be leak-checked before and after the move.

15. Ice will be maintained in the ice baths.

16. Filters and sorbent traps will be maintained at the proper temperature throughout the test run (if applicable).

17. Impingers will be weighed to the nearest 0.5 g or the liquid will be measured to the nearest mL before and after sampling.

18. The field balance will be checked daily against standard weights. The balance should read within ± 0.5 percent of the standard, or a calibration curve will be prepared for the balance.

19. A field blank will be collected by assembling and recovering one complete sampling train. The blank sample train will be leak checked at the beginning and end of a run (or for the same number of times as the actual test train). The filter housing and probe of the blank train will be heated during the sample test. No gaseous sample will be passed through the sampling train (If applicable).

20. A trip blank consisting of sampling media that have been transported to the site, but unopened, will be collected to be analyzed in the event of suspected contamination (if applicable).

21. Any unusual conditions or occurrences will be noted during each run on the appropriate data form.

22. The sampling port will be properly sealed to prevent air in-leakage.

The following QA/QC are applicable to EnRUD's CEM System.

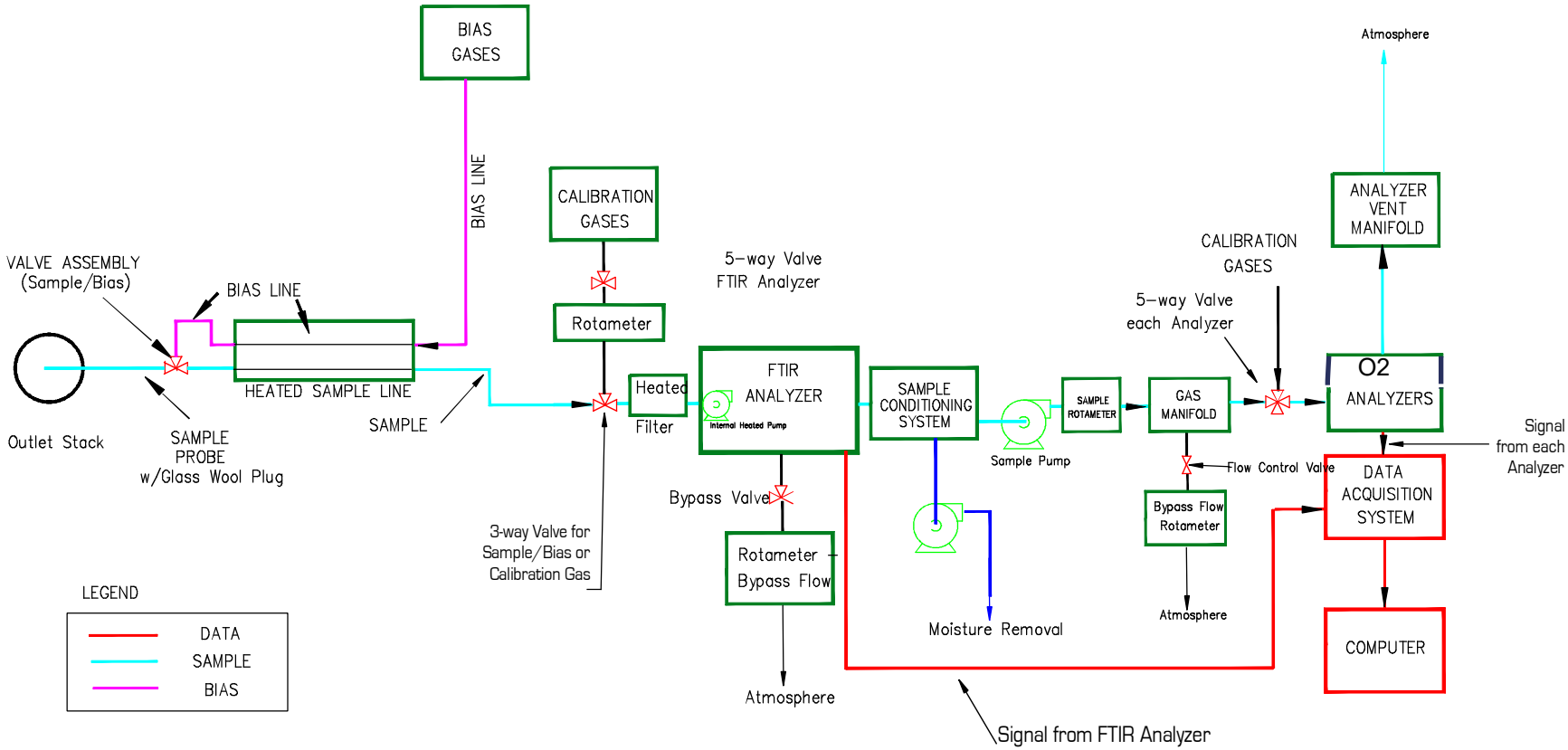
23. Leak check the sample lines, 3-way valve, and bias line.

24. Perform calibration error, system bias, and drift tests and make sure that all results meet QA/QC specifications in 40 CFR 60, Appendix A, Test Methods.

APPENDIX B

FTIR AND O_2 ANALYZERS CEMs DIAGRAM

DWG DATE: 6-2-97	DATE REVISED: 4/3/2020	PROJECT NO.:	DRAWING FILE: CEMS Sampling Diagram	PROJECT MANAGER: R. Cannon	DRAFTER: J. Manglicmot



FTIR and O2 ANALYZERS

CONTINUOUS EMISSIONS MONITORING SYSTEM

BLOCK DIAGRAM

By:

FIGURE

B